

**ABSTRACT OF THE DISCLOSURE**

A cellular communications system includes a plurality of mobile stations located within at least one cell; a base transceiver station (BTS) for servicing the cell; a base station controller (BSC) coupled to the BTS; and a Call Admission processor coupled to the BTS for receiving a call admission request from mobile stations located in the cell served by the BTS. The processor, which could be co-located with the BSC, grants cellular communications system resources to mobile stations based at least in part on a level of service required by the mobile stations and on a location of the mobile stations within the cell. For a mobile station having a high bandwidth requirement and that is determined to be located at the edge of the cell, the mobile station is preferentially granted system resources by being assigned a plurality of time slots per frame for forming one radio information block, and is operated with a non-convolutional modulation format and with turbo channel coding. For example, the mobile station is operated as a rate  $3/4$  16-QAM mobile station at a throughput of approximately  $K \times 59.2$  kbps, or as a rate  $4/5$  32-QAM mobile station at a throughput of approximately  $K \times 78.93$  kbps, or as a rate  $5/6$  64-QAM mobile station at a throughput of approximately  $K \times 98.667$  kbps, where K is the number of occupied time slots in the frame. The modulation format may be selected from, as examples, one of GMSK, 8-PSK, rectangular 16 gray coded QAM, 64 gray coded QAM, or 32 cross-QAM.